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ABSTRACT

An instructional systems approach to learning draws on principles of instructional design and development but also draws from theories such as behaviorism, information processing, cognitive theory, adult education, and systems theory among others. This paper focuses on how instructional designers can benefit from awareness of different adult education principles or theories. Traditionally instructional design is taught by connecting educational psychology via learning theories such as behaviorism, cognitive theory, and/or constructivism to learner design considerations. Although this is an acceptable manner for introducing instructional designers to varying educational theories, it does not provide a unified epistemology of learning and knowledge creation. This paper presents theories that reflect the primary view on which adult education is based, that learning is an interactive process constructed by the learner and not passively received from the environment. These adult education principles are then applied to instructional design issues. (Contains 15 references.) (Author/AEF)

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Employing Adult Education Principles in Instructional Design

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Abstract: An instructional systems approach to learning draws on principles of instructional design and development but also draws from theories such as behaviorism, information processing, cognitive theory, adult education, and systems theory among others. This paper focuses on how instructional designers can benefit from awareness of different adult education principles or theories. Traditionally instructional design is taught by connecting educational psychology via learning theories such as behaviorism, cognitive theory, and/or constructivism to learner design considerations. Although this is an acceptable manner for introducing instructional designers to varying educational theories, it does not provide a unified epistemology of learning and knowledge creation. This paper presents theories that reflect one primary view, that is, learning is an interactive process constructed by the learner and not passively received from the environment; the basis for which adult education is based. Applications of these adult education principles are then applied to instructional design issues.

Introduction

Numerous theories of learning have been established and published in educational psychology literature. Instructional designers, among the many hats they wear, need to have a strong foundation in learning theory, as this is the basis for which many instructional design decisions is based. Besides knowledge of these theories, they must also be able to apply theoretical views of learning to actual instructional practice. One way of doing this is to have a solid grasp on the nature of learning. This means an instructional designer must actively engage in a reflective process of self-awareness for which his/her personal beliefs of learning as based. This process is not easily accomplished. The presentation below of instructional design and adult education involved a personal introspection of the author's beliefs, through a review of many educational theories, to provide a framework for his future instructional development in adult education. This presentation is not meant to be a solution for all adult instruction creation, but is provided as a perspective for which others can based their personal models.

Instructional Design and Learning

Instructional design is a process of resolving instructional problems through systematic analysis of learning conditions. In the process of creating instruction, a designer draws upon knowledge and theory from psychology, education, communication, and technology (Seels & Glasgow, 1998). One way to represent the various components of instruction is through instructional design models. To date there are over 150 different models cited in the literature. Although there are many different models there is one common component, the learner. The major difference comes from how the learner is viewed as acquiring knowledge. These views have come primarily from educational psychology theories.

Traditionally, application of learning theories to instructional design has come from a body of literature that has grown from behavioral and cognitive psychology (Hiemstra & Brockett, 1994). Reigeluth (1983) recognized works of Skinner, Ausubel and Bruner as having a large impact on instructional design. The most recent influence on instructional design comes from constructivist psychology. The constructivist approach is primarily concerned with the way individuals construct knowledge based upon experiences, mental structures, and beliefs (Jonassen, 1991). The paradigm shift from behaviorist psychological approaches to cognitive psychology and even to constructivism has created quite a stir in the instruction design arena. This shift has been responsible for proliferation of many newer instructional design models.

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Application of design methods to learning situations, therefore, is based upon the perspective taken concerning knowledge acquisition. A traditional approach to this issue has been creating a model that represents a design process reflective of the psychological perspective associated with beliefs in learning. This is an acceptable method for mapping design decisions, but often leads to situations where other designers ignore the underlying psychological tenets concerning knowledge acquisition.

Adult Education and Learning

Adult education as a discipline has developed from several lines of inquiry (Hiemstra & Brockett, 1994). Merriam and Caffarella (1991) has shown adult learning theory growing from research addressing questions of why adults participate in learning, and knowledge of adults as learners. These issues give rise to varying views about adult students, and their ways of learning. Theories such as Knowles (1980) Androgyny, Mezirow's (1981) Theory of Transformational Learning, and work in the area of self-direction in learning (Cross, 1981; Tough, 1979) have impacted the adult education field. Sociological perspectives of teaching and learning have also been advocated by Jarvis (1985). Brookfield (1986) and Mezirow (1981) which endorse awareness of critical thinking in adult education theory. The results of theory development in adult education has lead to varying views about how adults learn, however, there are many common components can be seen in all these theories.

A review of some of the prominent adult learning theories is important prior to application to instructional design. There are four theories that have been widely written about in adult education, they are:

- Knowles' Androgyny
- Self-directed learning
- Knox's Proficiency Theory
- Mezirow's Transformational Learning Theory

Knowles Androgyny

Knowles' androgyny has been considered one of the first adult education theories which has been defined as the "art and science of helping adults learn" (Knowles, 1980, p. 43). Although a lot of work had been done in adult learning at the beginning of the 20th century by psychologists like Thorndike, most of these issues dealt with memorization and attrition of memory over time. It was not until the mid-1900's (1950-1960) that educators started getting directly involved in adult learning. During this time period the big focus in the United States research lied primarily on behavioral and empiricistic views of learning. During these decades, information was independent from the learners and learning was an objective process. Any learning where the "learner was active in constructing meaning and interpreting experience" (Pratt, 1993, p. 16) there was knowledge and truth compromise.

In the late 1960's Knowles looked at adult learning patterns and started making comparisons to how children learn. Changes in Knowles thought about adult learning occurred between 1970 and 1980. One of Knowles books, *The Modern Practice of Adult Education: Androgyny vs. Pedagogy* was later re-titled *The Modern Practice of Adult Education: From Androgyny to Pedagogy*. This revision showed a continuum of learning rather than differences per se in learning between adults and children. His belief was that learning could be teacher-directed or student-directed or anywhere in-between. "Thus, while androgyny does not define the uniqueness of adult learning, it does provide a set of guidelines for designing instruction with learners who are self-directed than teacher-directed" (Merriam, 1993, p. 8-9).

His primary premise remained the same, that is, learners where not passive participants in learning but actually individuals whom partake in their own learning. Knowledge, in his opinion, did not just exist out in the world for individuals to acquire but could be created by learners. Adults were individuals who took responsibility for their own learning. In revising the second edition of his book, he did not throw out the pedagogical principles but identified how they were involved in both adult and childhood learning. His general thought was that individuals (whether adults or children) when learning a new subject matter often needed direction and would seek a more "traditional" behaviorist-type learning approach. Information could be provided for them by a subject matter experts or resources. As a student (adult or child) acquired more knowledge about a subject, he or she became more independent and sought after his/her own learning experiences. Thus, one of the things Knowles is known for is his investigation into the transition from structured teacher- centered learning to a less structured student- directed

learning. The originally thought according to Knowles was that adults followed the student- directed learning approach while children followed a teacher- directed approach. This was found to be untrue; both adults and children can participate in both types of learning. This meant that learning for children and adults were not really as different as once proposed.

One major influence of differences in adult and children learning came from the environment where learning occurred. Children are placed in a classroom for instruction, while adults are often taught in a non-structured, on-the-job training environment. Thus it can be shown that environmental conditions play a role in the learning for both adults and children.

Self-directed Learning

Self-directed learning (SDL) was derived from the work of Houle's (1961), Tough (1971, 1979), and Knowles (1975). The theory is "grounded in the notion that adults are independent and thus self-directing" (Merriam, 1993, p. 9), it also goes as far as saying that individuals are self-motivated and often create their own learning. Although many adults would not consider themselves as learners, Tough's research (1971) showed the nearly 90% of adults participate in learning projects, and 70% are planned by the learner.

Self-directed learning is where an individual takes responsibility for his/her own learning, and acquires knowledge through independent training. This independence is not resource free. Many SDL learners will use the library, textbooks, or the Internet to gain some of the information that wish to acquire. The type of learning is usually self-initiated. Brockett and Hiemstra have written extensively in this area. They report that some individuals have a difficult time acquiring the ability to direct their own learning and that this type of learning can cause frustration. Part of this frustration is grounded in the types of learning that occurred during their younger years (i.e. was information fed to students or did they have some free thought). If information is provided to learners and they do not have to make decisions about what they want to learn and how they acquire this knowledge then they will not have these skills in their latter years. By teaching students in a guiding manner and allowing them to make decisions about what they want to learn, students gain the ability to learn independently. One of the main facets of SDL is students make decisions about the subject matter they want to learn and how they want to achieve their own learning. Learning objectives are not created by the instructor but by the learner.

Recent research has focused on documenting the existence and delineating characteristics of self-directed learning, while current research is focusing on identifying resources used by the learner, the quality of the learning, competencies needed to engage in SDL, and the conceptual meaning of this type of learning (Merriam and Caffarella, 1991). Additionally, determination of personality characteristics and SDL are being assessed.

Knox's Proficiency Theory

Proficiency theory is based upon a learner determining what he/she already knows and what he/she would to like to know. The theory posits "adult learning is motivated by a discrepancy between current and desired levels of proficiency" (Merriam, 1993, p. 10). Looking at the difference between existing knowledge and intended knowledge a learner determines the gap and addresses ways to fill the gap. This theory lends itself to adults because adults are better able to address the existence of a gap in knowledge. The determination of proficiency level is a task determined by the learner, unlike behaviorist learning where the instructor determines the gap and tries to fill it. In proficiency theory, the level of knowledge acquirement is at the discretion of the learner.

Mezirow's Transformational Learning Theory

Mezirow, Friere, and Daloz have assesses learning as process of change associated with knowing by use of critical reflections. Mezirow's work on transformational learning theory explains how adult learning is different from childhood learning. The major component that delineates a difference between adults and children is the critical reflection and awareness of "why we attach the meanings we do to reality" (Mezirow, 1981, p. 11). Mezirow's work, philosophically grounded in Habermas' ideas, is based upon adults being able to determine why they are learning. The conscious awareness that learning is taking place, and the awareness that learning needs to occur for some specific reason is important to his theory. Mezirow argues that learning because you are taught something and learning by recognizing why you are learning are two different things. Even though knowledge is

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instilled in the learner, the recognition of importance is a factor that assists with retention and further knowledge creation. Thus learning is an intuitive, dialectic, and transpersonal process.

Summary

The four theories discussed above are not a comprehensive lists of all adult education theories, but provides the foundation for others works in adult education, as well as set the stages for which the author bases his instructional design decisions. A brief summary of principles or characteristics of these theories will help focus these design decisions. The key characteristics of adult learning theory are:

- Knowledge is created by the learner
- Learners are motivated to learn on their own
- Learning can still occur in traditional ways however self-directness will occur as a subject/discipline become more familiar to the learner
- Adults are self-directed
- Adults understand why they are learning and place importance on that learning
- Adult learners can determine their own proficiency level and existing gaps
- Adults can do their own needs assessment
- Individual experience of the world is important to learning
- Learning in not the discovery of independent, pre-existing knowledge but the construction of meaning through experience
- Learning is more subjective than objective
- Emphasis is on individual interpretation, integration and transformation of knowledge
- Knowledge is actively constructed by the learner, not passively received from the environment
- Learning is an interactive process

The above list is based upon the following antecedents about learning.

- Each individual is autonomous and desiring self-improvement
- Each individual has to have the capacity to be self-directed
- Each person is unique, and these individualistic differences are to be respected

Considerations of Adult Education Principles in Instructional Design

Since instructional design decisions are based upon beliefs about how learners learn, there are certain characteristics (described above) that must be considered when designing and developing instructional materials for adult learners. Because adults want to see the importance in the material they are learning, the instructional material must show them how this material will benefit them. Depending upon the stage of the learner in the subject matter (either introductory, advanced, or somewhere in between), the design must facilitate that level of learning. If students are new to the material then they must be acquainted with the subject matter and may be given instruction following a more teacher-directed, prescriptive approach. However, if this material is advanced or if the students already know about the subject matter (continuing education is an example), then the design must involve student-directed learning. This means many avenues or options for the students. Instead of a linear learning experience, the student should be offered numerous pathways to expand his/her own learning. In this setting the instructor (whether it be a computer software package as in CBT, or it be a teacher) needs to becomes more of a facilitator.

In learning situations students should be able to chose what level of proficiency they wish to acquire (learning will not occur if you force them to learn something they don't want to). Providing guidance will assist the student in making decisions about learning proficiency. Offering suggestions and providing alternate learning situations will foster the learning most appropriate to the self-direct learner. This becomes difficult in situations where employers must mandate some training, as most adults are not interested, nor are they motivated to learn something that they have not initiated on their own.

Students should be allowed to pursue different avenues of learning on the subject matter, however resources must also be available for students to advanced their own learning in directions they wish to pursue. In designing computer-based training, if other resources are not available (such as a dictionary of key terms or help

options) then the training encounter will not be a fruitful as possible had the resources been there. A lot of adults stay away from CBT because the different avenues are often not available, and the resources for aiding them through the instructional process are weak.

Besides these components, the right perspective on learning needs to occur. The outlined components of adult education theory are the foundation for which the author develops his instructional material. Keeping in mind these attributes assists the design process. All to often instructional designs follow a model and ignore the underlying basis for which the model was created. Using an instructional design model that reflects a different perspective of learning from that which one is creating leads to a mismatch in instructional goals. Creating a linear design when the students are interested in making choices results in an unsuccessful training program. This is where a good need assessment comes into play. Recognizing attributes and goals of the learners are one of the most important steps in designing instruction. If a directive need assessment is not possible, then look at underlying theory about how the learners tend to learn (i.e. adults prefer to learn one way while children may not be accustomed or prepared to learning in this manner).

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